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WOODCOCK

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The American woodcock (*Philohela minor*) is known by a host of folk names: timberdoodle, night partridge, big-eye, bogsucker, and mudsnipe. It's a strange little creature with big eyes and a bill that looks too long for its body. Most active at dusk, night, and dawn, a woodcock uses its bill to probe rich soil for earthworms, its favorite food.

Woodcock are migratory. While a few birds from farther north may wait out an exceptionally mild winter on Pennsylvania's southern fringe, most timberdoodles pass through our state. They spend the cold months in the South——the Carolinas, Georgia, and northern Florida west to eastern Texas and Arkansas, concentrating in Louisiana and southwestern Mississippi. In spring, woodcock return north.

Taxonomically, the species is placed in Order Charadriiformes, which includes gulls, oystercatchers, plovers, stilts, curlews, sandpipers, snipe, phalaropes, and others. Within this large order, the woodcock belongs to Family Scolopacidae, a group of snipe and sandpipers with more than 80 species distributed over most of the world.

The American woodcock is closely related to the European woodcock (*Scolopax rusticola*). The Old World bird resembles its American counterpart and has a similar life history, but it is larger and almost twice as heavy.

Biology

A timberdoodle's plumage is an overall mottled russet and brown. The beige breast, back, and sides are overlaid with black and browns; the forehead and crown are ashy gray to black, barred with gold. The short tail is a combination of brick-red and black, tipped with gray. Feet and toes are bare and gray- to flesh-colored.

A woodcock is 10-12 inches in length (a little longer than a bobwhite quail), has a standing height of about five inches and a wingspread to 20 inches. Body conformation could be described as "chunky"——short and heavy, with a short, thick neck and a large head. Wings are short and bluntly rounded. Sexes look alike, although females generally average a bit heavier than males (7.6 vs. 6.2 oz). Weights for both sexes vary according to time of year.

A woodcock's bill is long and thin. A female's bill measures 2 3/4 inches or slightly longer, while a male's is usually less than 2½ inches. Sensitive nerve endings in the lower third of the bill help a woodcock locate earthworms. A special bone-muscle arrangement lets the bird open the tip of its upper bill, or mandible, while it is underground. The long tongue and the underside of the mandible are both rough-surfaced to grasp and pull slippery prey out of the ground.

Eyes are large and set well back and high on the sides of a timberdoodle's head. Naturalists have speculated that this positioning lets the bird look all around——behind, above, and to the sides, as well as ahead——while it probes for food.

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Nostrils are set high on the bill, close to the skull. A woodcock's ears are ahead of the eyes, between the base of the bill and the eye sockets. Hearing and sight are acute.

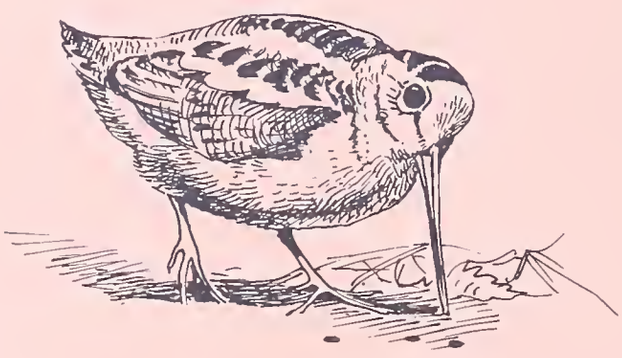
The woodcock's brain is unique among birds. Its cerebellum——which controls muscle coordination and body balance——is in a ventral position, below the rest of the brain and above the spinal column. (In most birds, the cerebellum occupies the rear of the skull.) One theory suggests that as the woodcock evolved, the eyes moved back in the skull, the bill lengthened, and the nostrils approached the base of the bill——adaptations which permitted ground-probing. As a result, the brain was forced back, and the mid-brain and hind-brain were pushed down and slightly forward. The woodcock of today, in essence, has an upside-down brain.

When woodcock flush from the ground, air passing through their rapidly beating wing primaries produces a trilling or whistling sound. The birds usually flutter up out of cover, level off, and fly from ten to several hundred yards before setting down. Being migratory birds, they are capable of sustained flight.

Food——Earthworms, high in fat and protein, make up about 60 percent of a woodcock's diet. An additional 30 percent is insects (ants, flies, beetles, crickets, caterpillars, grasshoppers, and various larvae), crustaceans, millipedes, centipedes, and spiders. About 10 percent is plant food, mostly seeds from bristlegrass, panicgrass, sedge, ragweed, knotweed, and blackberry. Timberdoodles do most of their feeding in early evening and just before dawn. Digestion is rapid; an adult may eat its weight in worms each day.

Woodcock are quite vocal; naturalists have recorded and interpreted at least 10 separate calls. During the mating season, a male timberdoodle on the ground will sound a nasal, buzzing, insect-like note usually described as *peent*. Preceding each *peent* is a two-syllable gurgling note, *tuko*. While the *peent* carries several hundred yards, the much softer *tuko* is audible only within about 15 feet of the bird.

The flight song——a series of liquid, gurgling *chirps*——is sounded on the wing by a male trying to attract a mate. A male defending breeding territory against another male calls *cac-cac-cac-cac* as he flies toward his rival. A female will squeal and often feign a broken wing to lure intruders away from her young. Other calls express alarm or provide communication between hens and offspring.



Migrating woodcock have turned up in Pennsylvania as early as February 25, but most don't arrive until the last two weeks in March. Migration is complete by mid-April.

Reproduction——In spring, males establish territories known as "singing grounds." These are woodland clearings spotted with low brush, or open fields next to brush or woods; they vary in size, but a quarter of an acre seems big enough. While on the ground, the males *peent* to attract females. A male will take off and fly up to 200-300 feet on twittering wings; then he'll spiral or zig-zag back to earth, sounding a liquid, warbling song as he descends. Courtship occurs for short periods at dawn and dusk; it's most active when temperatures are above freezing and winds are calm.

Females seek out males on the singing grounds. Males may mate with several females. In Pennsylvania, most breeding takes place from early March to mid-May. Woodcock of both sexes breed in their first year on the breeding grounds (i.e., before they're a year old).

Hens usually nest within 150 yards of the singing grounds where they mated; males play no role in nest selection, incubation, or rearing of young. Favored nesting habitat includes damp woods near water, hillsides above moist bottomlands, old fields with low ground cover, briar patches, the edges of shrub thickets, and young conifer stands. There may be little overhead cover (as in the case of old fields) or up to 50 feet of vegetation (as in hardwood stands). The average cover height is 12 feet.

A typical timberdoodle nest is a slight depression on the ground in dead leaves. Some nests are rimmed with twigs or lined with pine needles. An egg-laying or incubating hen is difficult to spot, as her mottled, brown plumage usually blends in with the background.

In Pennsylvania, woodcock nest from late March into June. Located near nesting sites are feeding areas of open woods, abandoned fields, brushy areas, and mixed forests, where incubating hens feed. Although they are solitary nesters, hens may share feeding grounds with other timberdoodles.

A female lays one egg a day until she completes the normal clutch of four. Eggs are oval, 38x29 mm, large for the size of the bird. The shells are smooth, with a slight gloss, colored pinkish buff to cinnamon and covered with light brown blotches overlaid with darker speckling.

Incubation takes 19-22 days. It begins after the last egg is laid, so all eggs receive equal incubation and hatch at approximately the same time. If a hen is disturbed early in the incubation period, she may abandon the nest. The longer she sits on the eggs, however, the less likely she will be to desert them. Toward the end of the incubation period, she may sit tight even when touched by a human's hand. Nest predators include domestic dogs and cats, snakes, skunks, opossums, raccoons, and crows; fires and flooding also destroy nests. Hens that lose their first clutch may renest, often laying

only three eggs. Eggs hatch from early April until mid-June, peaking in our state during the last week in April and the first week in May.

Chicks——Eggs split lengthwise (unique among birds) as the woodcock chicks emerge. Chicks are precocial, able to leave the nest a few hours after hatching. They're covered with fine down, pale brownish to buff with brown spots and stripes above, and rufous below; a dark line runs from the bill back to the eye. From the day of hatching, chicks "freeze" when threatened or in response to the hen's alarm call. During the first few days, the hen broods her chicks frequently, especially during rain, snow, or cold. At first she finds worms for them, but after a few days, they are probing for and capturing worms by themselves.

Chicks grow rapidly. After two weeks they can fly short distances, and at the end of four weeks they're almost fully grown, fly strongly, and look like adults. The family breaks up when juveniles are 6-8 weeks old. Adults molt during the summer. As days grow shorter and temperatures drop, timberdoodles form loose flocks and head south.

Migration——Woodcock migrate at low altitudes (about 50 feet), flying at night and resting and feeding in secluded thickets during the day. They travel alone, or in loose flocks called "flights." Birds from farther north may start to pass through Pennsylvania in late September; the migration peaks in late October and early November, with stragglers up until the end of November. Heavy northwest winds and cold nights may start large numbers of timberdoodles winging south.

Some wildlife biologists believe that woodcock have three major migration routes. The Atlantic Route follows the northeast's coast and coastal plain from Nova Scotia to Florida. Most of Pennsylvania is included in this flyway. The Central Route covers a broad stretch from Quebec, western New York, northwestern Pennsylvania, southern Ohio and Indiana, through Kentucky, Tennessee and Mississippi into Louisiana. More woodcock travel this route than either of the others. The Western Route extends from Wisconsin and Minnesota almost due south to Louisiana and eastern Texas. In spring, woodcock reverse direction and return north; as with so many migratory birds, they home strongly to the areas where they hatched.

Woodcock are hardy and seem able to recover from injuries that would kill most other birds. If a timberdoodle reaches adulthood, its life expectancy is about 1.8 years. Banded wild birds seven years old have been recovered. Mortality factors: predators; accidents, many occurring during night flight; hunting; disease; parasites, and bad weather. Woodcock returning north too early may be caught by late-season snows or hard freezes, which seal off their food supply.

As migratory birds, woodcock fall under the jurisdiction of the federal government's Fish and Wildlife Service. This agency monitors the species' population and sets the framework for hunting seasons and bag limits.

Population

Compared to most other game birds, woodcock have a low potential productivity. A female raises only one brood each year, and each brood consists of but four (and sometimes only three) young. Fortunately, the species has a high nesting success rate——60-75 percent——and low juvenile mortality.

Population densities vary in any one locale. Woodcock may be scattered, concentrated, or absent, depending on time of year, weather conditions, or habitat. In autumn, concentrated groups of woodcock may not reflect the carrying capacity of land on which they're found, as they may just be passing through. The overall population can fluctuate greatly over the years. Steady human encroachment on wet woodland, timber maturation, and flooding may pose threats to the woodcock population.

In the last two decades, wildlife biologists have noted increased amounts of chlorinated hydrocarbons in tissues, eggs, and newly hatched young of woodcock in some areas. (Chlorinated hydrocarbons are chemical compounds often used as pesticides; they include aldrin, dieldrin, heptachlor, DDT, and many others.) These chemicals apparently accumulate in earthworms, which are then eaten by woodcock. It is not yet known whether——or how much——chlorinated hydrocarbons affect woodcock populations.

Habitat

Habitat requirements for woodcock change throughout the year. In spring, they need areas for courtship and nesting; in summer, for brood raising; during fall and spring migrations, for feeding and resting; and they require wintering habitat in the southern states to which they migrate. Food must be available during all seasons.

Woodcock are attracted to moist forest land in early stages of succession. They tend to use edges rather than interiors of big, even-age thickets. The following plants make land more attractive to timberdoodles: alder, aspen, hawthorn, gray dogwood, crab apple, blue beech, and gray birch. These species can be planted, or, if they already grow in a given area, encouraged by cutting down large trees which may be shading them and stunting their growth.

For courtship, males need singing grounds––clearings a quarter-acre or larger, with a straight, unimpeded take-off strip 15-20 yards long. As trees and shrubs in the clearing grow larger, woodcock will seek out other areas; to keep a singing ground functioning, it must be periodically clearcut or brushed out.

Females nest and raise broods near the breeding grounds. Good cover includes edges of thickets, young conifer plantations, and old, brushy fields. The best feeding areas are shrub patches near streams, springs, or marshy ground; resting cover often is on high, drier ground. Feeding and resting cover are used by hens and broods, males, and migrating timberdoodles.

The life of a woodcock cover which meets three-season habitat requirements is about 20-25 years in Pennsylvania. As the cover matures, different tree species take over, and it grows less suitable. Over-mature aspen and alder tracts can be cut or burned; the resulting shoot growth will restore good habitat.

A detailed synopsis of woodcock management practices can be found in *The American Woodcock in Pennsylvania,* s 32-page booklet written by PGC Wildlife Biologist Steve Liscinsky. This booklet is available from the Pennsylvania Game Commission, P.O. Box 1567, Harrisburg, Pa. 17120.

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WILDLIFE NOTES AVAILABLE

175-1	Squirrels (Gray, red, fox and flying squirrels)	175-11	Otter
175-2	Ruffed Grouse	175-12	Crows & Ravens
175-3	Bobcat	175-13	Woodpeckers
175-4	Cottontail Rabbit	175-14	Beaver
175-5	Red and Gray Foxes	175-15	Bobwhite
175-6	Woodchuck	175-16	Heron Family
175-7	The Varying Hare (Snowshoe Rabbit)	175-17	Wild Turkey
175-8	The Night Hunters: Owls (Barn, great horned, snowy, barred, long-eared, short-eared, screech, and saw-whet owls)	175-18	Dove
175-9	Raccoon	175-19	Ring-Necked Pheasant
175-10	Raptors (Goshawks; sharp-shinned, Cooper's, red-tailed, red-shouldered, broad-winged, rough-legged hawks; harrier, peregrine, merlin and kestrel)	175-20	Canada Goose
		175-21	Woodcock